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Kernel Samepage Merging (KSM) at Meta and Future Improvements to KSM

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Kernel samepage merging (KSM) is a memory de-duplication scheme that finds duplicate pages in memory and shares them in order to alleviate memory bottlenecks. However, KSM can have a negative impact on performance, as it requires scanning all target pages.

In this presentation, I describe how a real-world application is used, how it is configured to make good use of KSM, and what benefits can be achieved in terms of memory savings.

The presentation evaluates the current limitations of KSM and how future KSM features can reduce the CPU consumption. Specifically, the presentation will include details about “adaptive page scanning” and an advisor to select suitable values for how many pages to scan.

Results show that this can reduce the CPU consumption of the ksmd background thread significantly.

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